

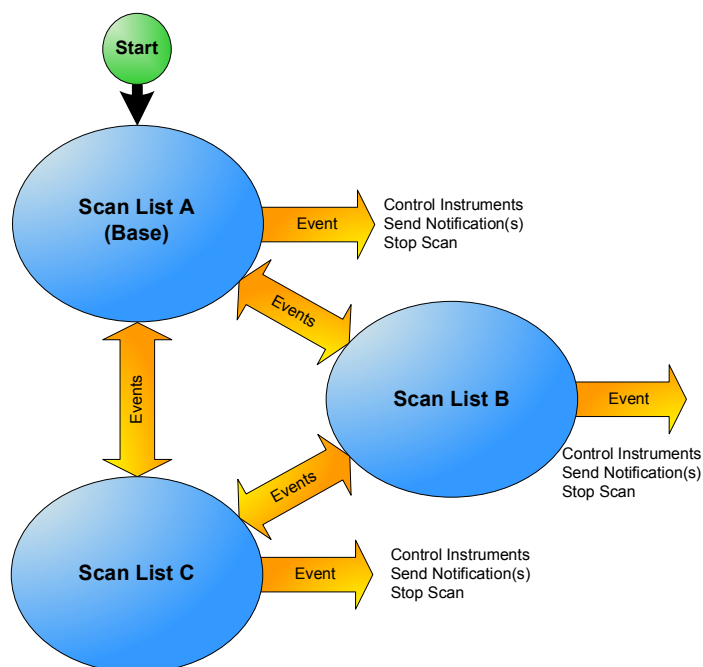


Agilent BenchLink Data Logger Pro Software Quick Start Tutorial

BenchLink Data Logger Installation CD-ROM. You can install the BenchLink Data Logger applications listed below from the *Agilent BenchLink Data Logger CD-ROM*.

Agilent's BenchLink Data Loggers

- **BenchLink Data Logger** - A free application for basic scanning that is included with every Agilent 34970A, 34972A, and 34980A Data Acquisition/Switch Unit.
- **Upgrade to BenchLink Data Logger Pro!** - A licensed application for advanced scan control, limit testing, and SCPI instrument control for use with the Agilent 34970A, 34972A, and 34980A. Your installation CD contains a free 30-day trial version of BenchLink Data Logger Pro. Here are some of the many features of BenchLink Data Logger Pro:



- **Scanning Flexibility!** Multiple scan lists allow you to tailor individual scans to your measurement needs. Event-based decision making controls the scanning. Multiple instruments are seamlessly integrated into scan lists.
- **Real-Time Limit Checking, Decision Making and Event Handling!** Advanced limit checking allows the software to make decisions and branch between scan lists, control instrumentation with flexible SCPI commands, handle errors and send notifications in response to events.
- **Easy Data Storage and Analysis!** Data can be automatically stored in a spreadsheet-compatible data file.
- **No Programming!** Instrument control and decision making that once required extensive programming skills can now be done in an easy to use spreadsheet environment...**all without programming!**

More Application, Information, and Pricing available at:



TestWorld

250 Technology Way
Rocklin, CA 95765

sales@testworld.com
1-855-200-TEST (8378)

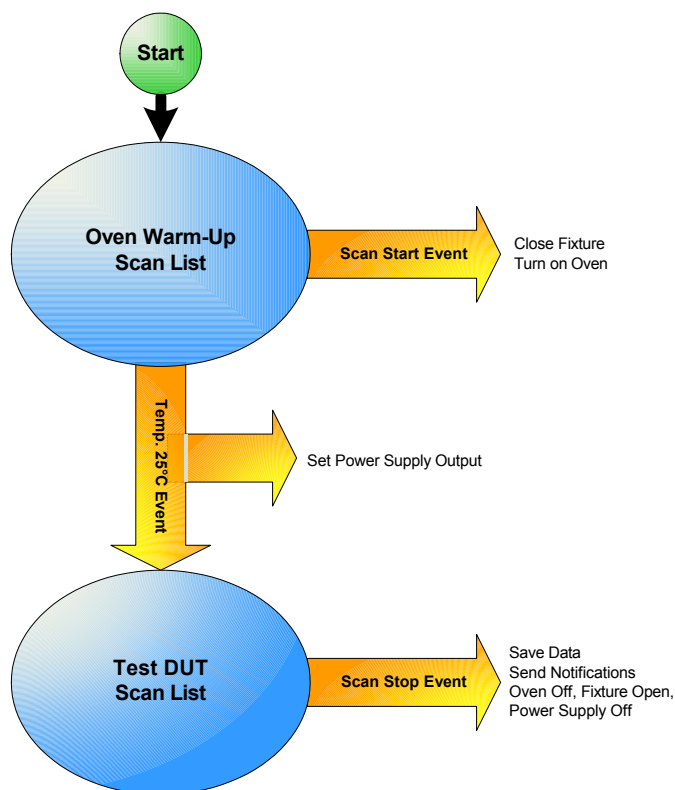
Click to go www.TestWorld.com



Agilent Technologies

Scanning and Instrument Control with BenchLink Data Logger Pro

This Quick Start Tutorial shows just how easy it is to control scanning and instruments with BenchLink Data Logger Pro. The following pages show a typical test scenario where the DUT (Device Under Test) is in a temperature-controlled test fixture. The sequence of operations is:



1. When the first scan list, *Oven Warm-Up*, starts, a script closes switches that close the test fixture and turn on the oven heater.
2. The first scan list, *Oven Warm-Up*, then monitors the oven temperature.
3. When the temperature stabilizes to between 24°C and 26°C for five successive scans, a limit event* runs a script that configures a GPIB power supply that powers the DUT.
4. The second scan list, *Test DUT*, measures the DUT's input and outputs for eight scans.
5. When the DUT test is finished, a script turns off the power supply's output, and opens switches that turn off the oven and open the test fixture.
6. A notification signals the computer to beep and logs the scan finished event.

...all without writing a single line of code!

**Limit events include: above a high value, below a low value, out of range, in range, stabilized in a delta band, and destabilized outside a delta band. You can set any of these limits to occur after a specified number of successive scans.*

Starting BenchLink Data Logger Pro

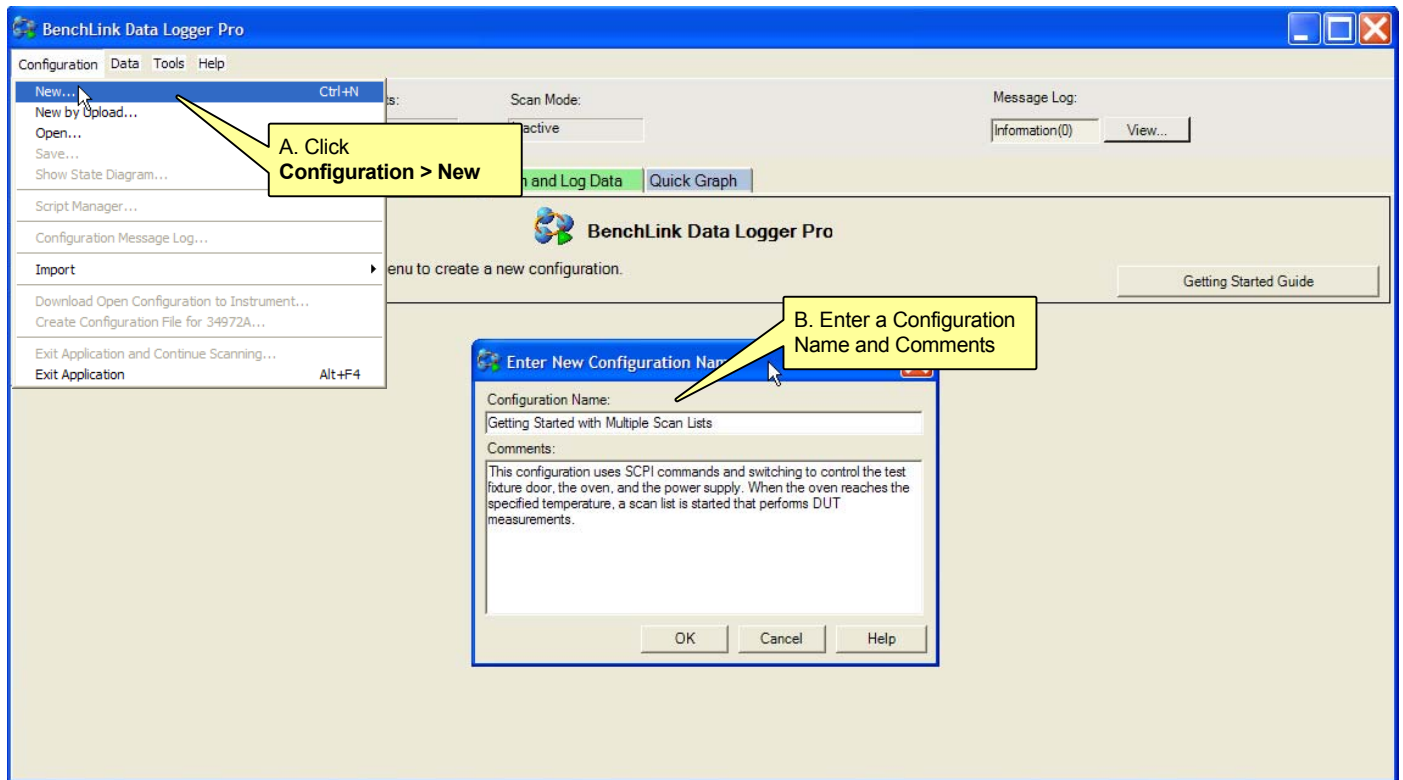
After installing the Agilent IO Libraries and BenchLink Data Logger Pro, click this icon on your desktop to start the application:



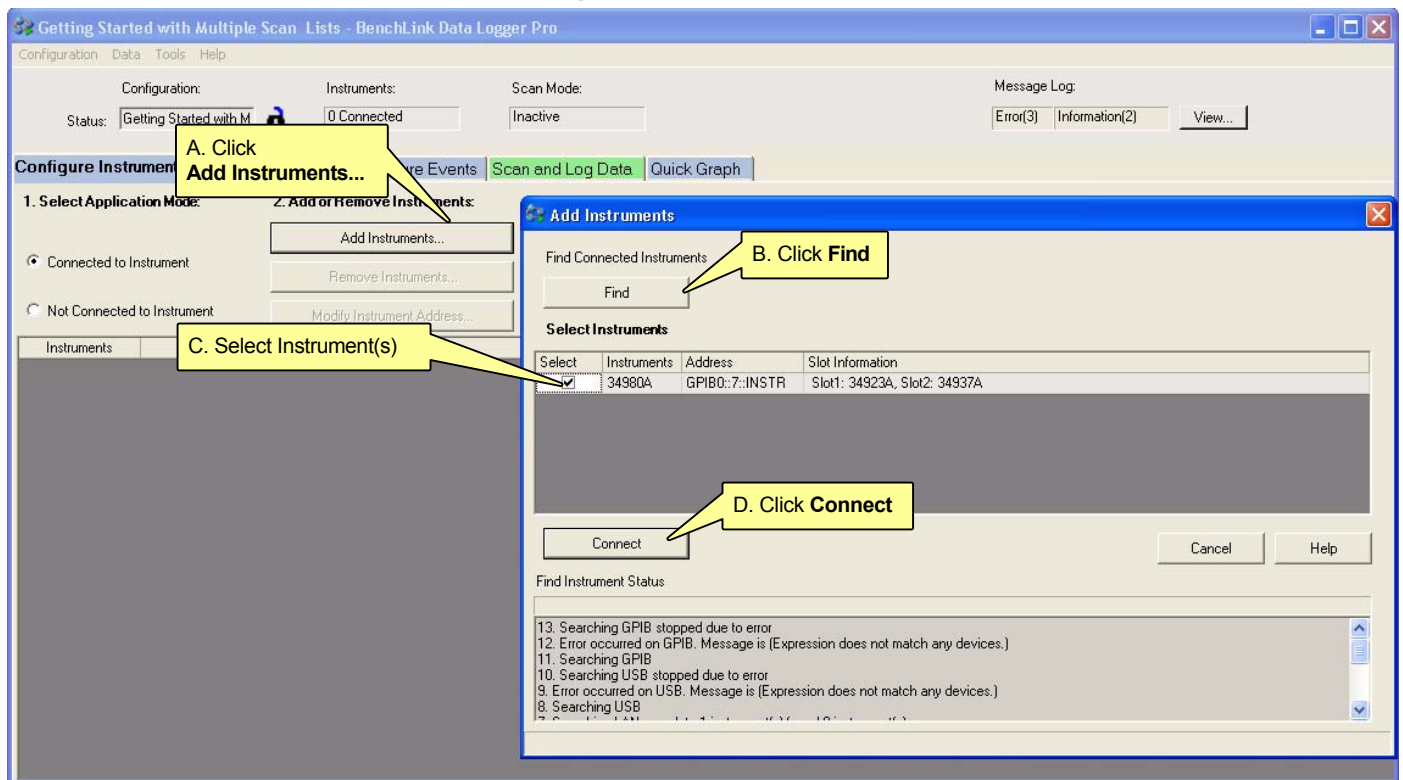
Once the application has started, click **Help > Quick Start Videos** to watch videos that show you how to get started with BenchLink Data Logger Pro.

Note: If you are having difficulty running the application, refer to the software installation instructions at the end of this document.

Step 1. Create a Configuration (Configure Instruments Tab)



Step 2. Add Instruments (Configure Instruments Tab)



Step 3. Configure the Base Scan List (Configure Scan Lists Tab)

Getting Started with Multiple Scan Lists - BenchLink Data Logger Pro

Configuration: Instruments: Scan Mode: Message Log: Information(0) View...

Status: Getting Started

Configure Instruments

Scan List Manager

Create Additional Scan List... Rename... Delete...

Oven Warm-Up (Base) Test DUT

Channels

Instruments	Enable Channel	Scan	Name	Measurement	Scaling	Gain (M)	Offset(B)	Unit	Channel Limit
1. Instr1									
34923A									
1001	<input checked="" type="checkbox"/>		Oven Temp	Temp 10K Therm	None	C			In Limits...
1002	<input type="checkbox"/>		Power In	DC Voltage	Auto	5.5		VDC	Select...
1003	<input type="checkbox"/>		Freq Out	Frequency	Auto	5.5		HZ	Select...
1004	<input type="checkbox"/>		3VAC Out	AC Voltage	Auto	6.5		VAC	Select...
1005	<input type="checkbox"/>		5VDC Out	DC Voltage	Auto	5.5		VDC	Select...
1006	<input type="checkbox"/>			DC Voltage	Auto	5.5		VDC	Select...
1007	<input type="checkbox"/>			DC Voltage	Auto	5.5		VDC	Select...
1008	<input type="checkbox"/>			DC Voltage	Auto	5.5		VDC	Select...
1009	<input type="checkbox"/>			DC Voltage	Auto	5.5		VDC	Select...
1010	<input type="checkbox"/>			DC Voltage	Auto	5.5		VDC	Select...
1011	<input type="checkbox"/>			DC Voltage	Auto	5.5		VDC	Select...
1012	<input type="checkbox"/>			DC Voltage	Auto	5.5		VDC	Select...

Note: The images shown in of this tutorial are from a built-in Data Logger Pro simulation. Simulations allow you to view BenchLink Data Logger Pro operations without having equipment connected. You can access this simulation by clicking: Help > Start Simulation Mode > Getting Started with Multiple Scan Lists.

Step 4. Configure Additional Scan Lists (Configure Scan Lists Tab)

Getting Started with Multiple Scan Lists - BenchLink Data Logger Pro

Configuration: Instruments: Scan Mode: Message Log: Information(5) View...

Status: 1 Connected Simulation Mode

Configure Instruments

Configure Scan Lists

Scan List Manager

Create Additional Scan List... Rename... Delete...

Oven Warm-Up (Base) Test DUT

Channels

Instruments	Enable Channel	Scan	Name	Function	Range/Ref	Res	More	Scaling	Gain (M)	Offset(B)	Unit	Channel Limits (for Events)
1. Instr1												
34923A												
1001	<input type="checkbox"/>		Oven Temp	Temp					1	0	C	Select...
1002	<input checked="" type="checkbox"/>		Power In	DC Voltage	Auto	5.5			1	0	VDC	Select...
1003	<input checked="" type="checkbox"/>		Freq Out	Frequency	Auto	5.5			1	0	HZ	Select...
1004	<input checked="" type="checkbox"/>		3VAC Out	AC Voltage	Auto	6.5			1	0	VAC	Select...
1005	<input checked="" type="checkbox"/>		5VDC Out	DC Voltage	Auto	5.5			1	0	VDC	Select...
1006	<input type="checkbox"/>			DC Voltage	Auto	5.5			1	0	VDC	Select...
1007	<input type="checkbox"/>			DC Voltage	Auto	5.5			1	0	VDC	Select...
1008	<input type="checkbox"/>			DC Voltage	Auto	5.5			1	0	VDC	Select...
1009	<input type="checkbox"/>			DC Voltage	Auto	5.5			1	0	VDC	Select...

Turn Over for Step 5

Step 5. Configure Events (Configure Events Tab)

Configuration: Status: Getting Started with Mi Instruments: 1 Connected Scan Mode: Simulation Mode Message Log: Information(6) View...

Configure Instruments Configure Scan Lists **Configure Events** Scan and Log Data Quick Graph

State Diagram Show State Diagram...

Events when Running Oven Warm-Up

Priority	Name	Event	Select Limit(s) that Triggers Event	Run Script	Notification(s)	Next Step
1		At Start of Scan...	Not Applicable	Close Fixture, Oven On	None...	Continue Scan...
2		On Single Channel Limit...	Instr1(1001 <Oven Temp>) Range 2.4e01 To 2.6e	Program Power Supply	None...	Stop Scan and Start Scan on Test DUT...
3		At End of Scan...	Not Applicable	None	None...	Stop Configuration...

Events when Running Test DUT

Priority	Name	Event	Select Limit(s) that Triggers Event	Run Script	Notification(s)	Next Step
1		At Start of Scan...	Not Applicable	None	None...	Continue Scan...
2		At End of Scan...	Not Applicable	Power Supply Off, Oven	Beep, Log...	Stop Configuration...

Callouts:

- These events are configured for the Base scan list (*Oven Warm-Up*).
- Each script runs when the corresponding event occurs.
- This is the limit event associated with the *Oven Temp* channel.
- When the limit event occurs, stop scanning on this scan list and start the *Test DUT* scan list.
- These events are configured for the *Test DUT* scan list.
- The configuration stops when this scan list ends.

Step 6. The State Diagram (Configure Events Tab)

State Diagram Click the Show State Diagram... button (see above) to view the State Diagram.

Sequence table:

Current Scan List	Priority	Event Details	A	B	C	D
Oven Warm-Up	1	At Start of Scan	Run Close Fixture, Oven On			
	2	On Single Channel Limit	Stop this Scan	Run Program Power Supply	Start scan on Test DUT	
	3	At End of Scan	Stop this Scan			
Test DUT	1	At Start of Scan				

Print State Diagram Export to JPEG Refresh

State Diagram

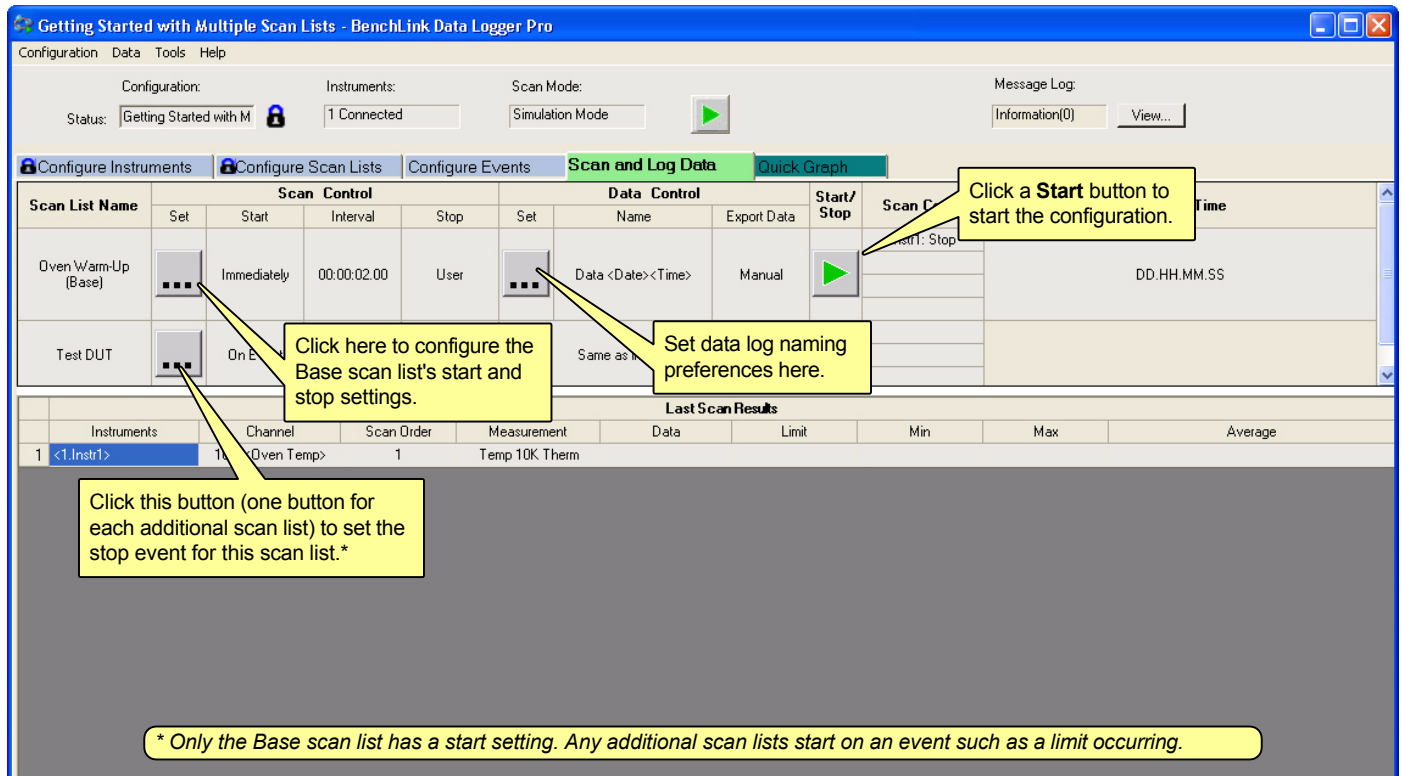
```

graph TD
    Start((Start Scan)) -->|1. At Start of Scan (A1)| OvenWarmUp((Oven Warm-Up))
    OvenWarmUp -->|2. On Single Channel Limit (A2>B2>C2)| TestDUT((Test DUT))
    TestDUT --> End(( ))
  
```

Callouts:

- The **Sequence Table** shows the order of execution for scan lists, events, scripts, and notifications.
- The **State Diagram** graphically shows the configured scan lists, scripts, and notifications.
- These codes (A2 > B2 > C2 and so on) cross-reference the **State Diagram** to the rows and columns of the **Sequence Table**.

Step 7. Configure the Scan and Data Log Settings (Scan and Log Data Tab)



Configuration: Status: Getting Started with M Instruments: 1 Connected Scan Mode: Simulation Mode Message Log: Information(0) View...

Configure Instruments Configure Scan Lists Configure Events **Scan and Log Data** Quick Graph

Scan List Name	Set	Start	Interval	Stop	Set	Name	Export Data	Start/Stop	Scan Count	Time
Oven Warm-Up (Base)	...	Immediately	00:00:02.00	User	...	Data <Date><Time>	Manual	▶		DD.HH.MM.SS
Test DUT	...	On E			...	Same as				

Click here to configure the Base scan list's start and stop settings.

Set data log naming preferences here.

Click a Start button to start the configuration.

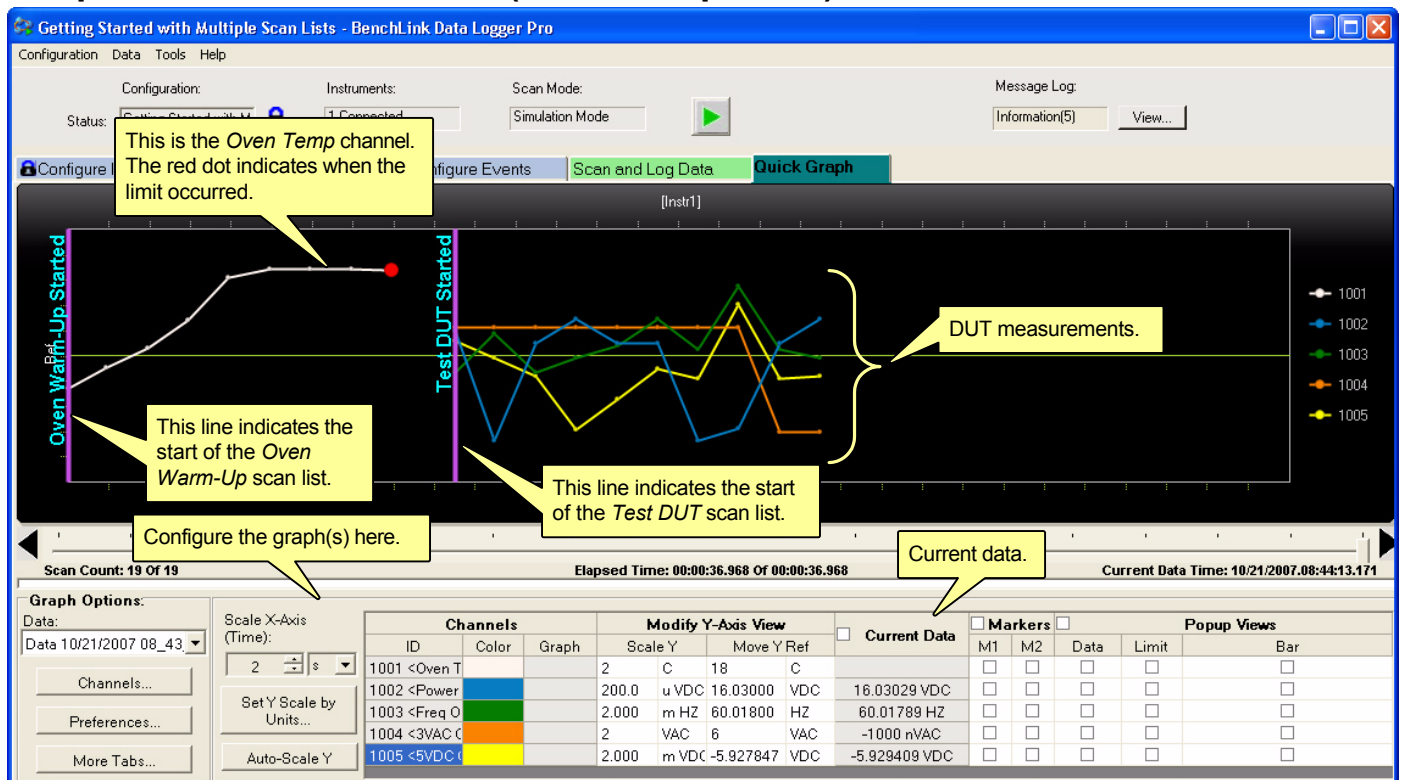
Click this button (one button for each additional scan list) to set the stop event for this scan list.*

Last Scan Results

Instruments	Channel	Scan Order	Measurement	Data	Limit	Min	Max	Average
1 <1.Instr1>	1 <Oven Temp>	1	Temp 10K Therm					

* Only the Base scan list has a start setting. Any additional scan lists start on an event such as a limit occurring.

Step 8. View Scanned Data (Quick Graph Tab)



Configuration: Status: Getting Started with M Instruments: 1 Connected Scan Mode: Simulation Mode Message Log: Information(5) View...

Configure Instruments Configure Events **Scan and Log Data** **Quick Graph**

This is the *Oven Temp* channel. The red dot indicates when the limit occurred.

Oven Warm-Up Started

This line indicates the start of the *Oven Warm-Up* scan list.

Test DUT Started

This line indicates the start of the *Test DUT* scan list.

DUT measurements.

Configure the graph(s) here.

Current data.

Scan Count: 19 Of 19 Elapsed Time: 00:00:36.968 Of 00:00:36.968 Current Data Time: 10/21/2007 08:44:13.171

Graph Options:

Data: 10/21/2007 08_43

Channels...

Preferences...

More Tabs...

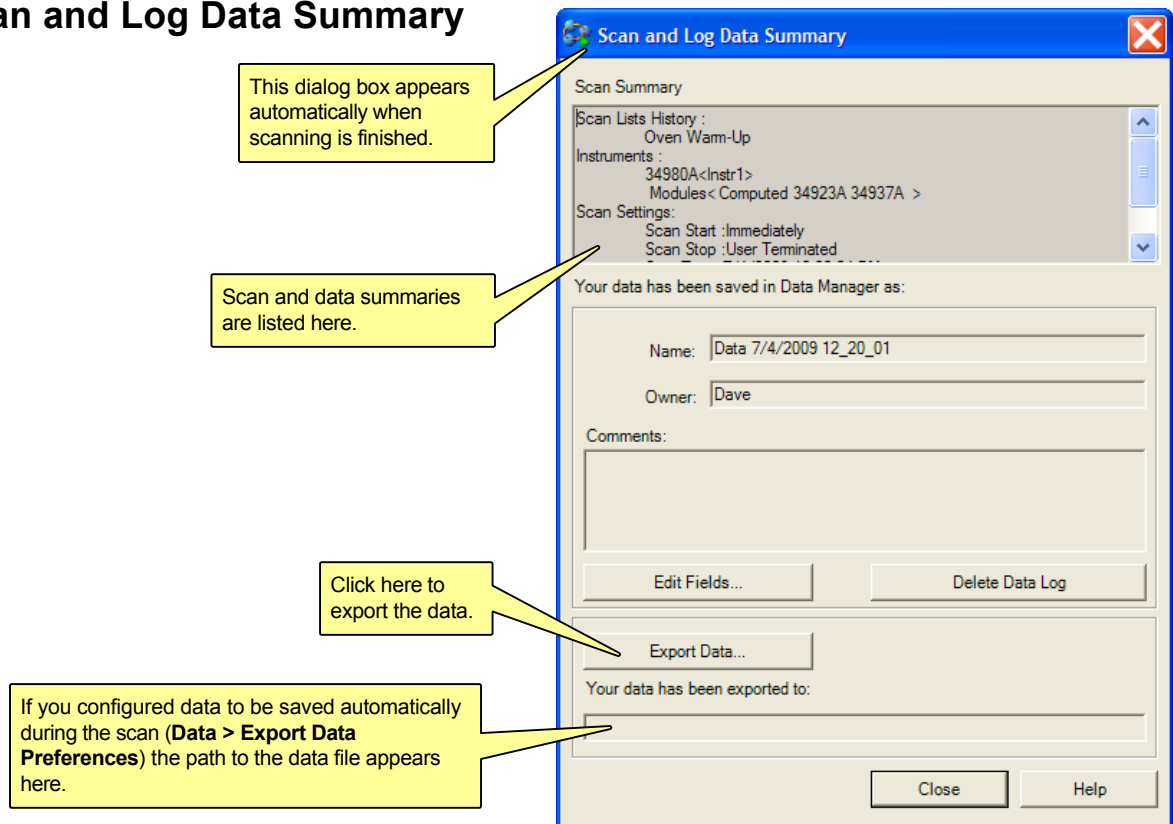
Scale X-Axis (Time): 2 s

Set Y Scale by Units...

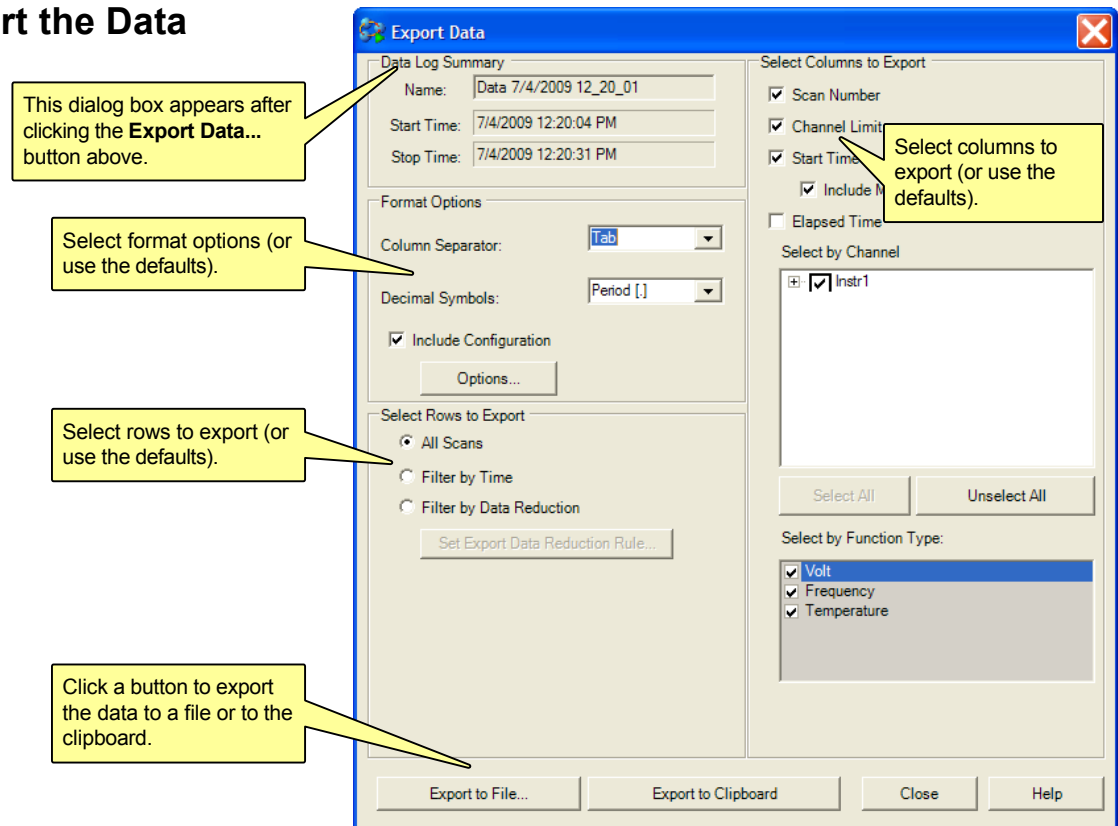
Auto-Scale Y

Channels			Modify Y-Axis View			Current Data	Markers		Popup Views		
ID	Color	Graph	Scale Y	Move Y Ref	M1		M2	Data	Limit	Bar	
1001 <Oven T			2	C	18	C					
1002 <Power			200.0	u VDC	16.03000	VDC					
1003 <Freq O			2.000	m HZ	60.01800	HZ					
1004 <3VAC C			2	VAC	6	VAC					
1005 <5VDC C			2.000	m VDC	-5.927847	VDC					

Step 9. Scan and Log Data Summary



Step 10. Export the Data



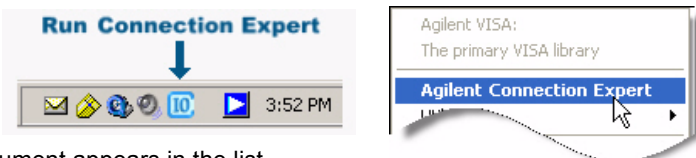
Installing the Software

Use Agilent Connection Expert to Connect to Instruments

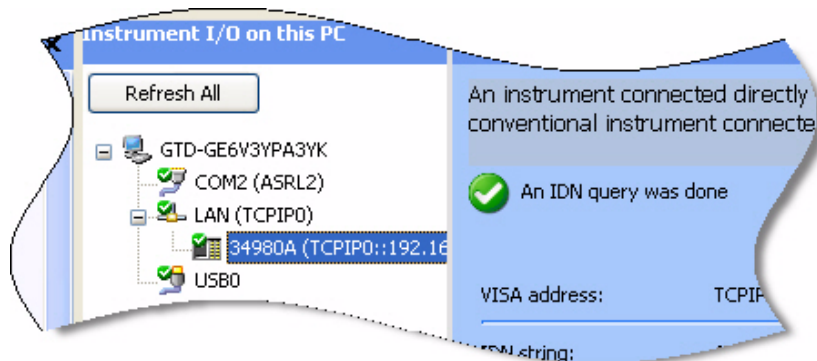
Agilent Connection Expert is an Agilent IO Libraries utility that configures the IO interface between the instruments and your PC. The IO Libraries are contained on the *Agilent Automation-Ready CD* or may be downloaded from the Agilent Developer Network website at: <http://adn.tm.agilent.com>. Data Logger Pro supports the M.01.01.04 version of the Agilent IO Libraries and newer.

1. Install the Agilent IO Libraries on your PC. Connect the instrument to the PC via LAN, GPIB, or USB.*

2. From the PC taskbar, click the Agilent IO Control icon and select **Agilent Connection Expert** from the menu.



3. Double-click the interface from the list. If your instrument appears in the list, with a green check mark, Connection Expert has already found and verified communication with the instrument. You can now skip ahead to *Install the Agilent BenchLink Data Logger Pro Software* below. If the instrument is not in the list, continue on to step 4.
4. With the interface selected, right-click and select **Add Instrument**. If this is a LAN interface, click the **Auto Find** button. Follow the instructions on the screen to complete the installation. When finished, you should see your instrument in the list with a green checkbox.



5. If you are having difficulty connecting to the instrument, use the instrument's front panel to ensure the interface is enabled and configured properly. Refer to the instrument's user's guide for details.

**You can also use a serial interface for the 34970A only.*

Install the Agilent BenchLink Data Logger Pro Software

Agilent BenchLink Data Logger Pro is a licensed product that has a 30-day free trial evaluation period. To get a license, go to www.agilent.com/find/34830A (for the 34970A/34972A) or www.agilent.com/find/34832A (for the 34980A).

1. Insert the Agilent BenchLink Data Logger CD into your PC's CD ROM drive. Installation should start immediately. If not, navigate to the CD drive in Windows Explorer and click Setup.exe.
2. Follow the instructions appearing on your screen. When prompted to select a data logger click: Agilent BenchLink Data Logger Pro.
3. After completing the installation, click the Data Logger Pro icon on your desktop to start the application:



See the instrument user's manual for safety and wiring information.